



## Video Facilitator's Guide

Kindergarten  
 Decomposing 5

### Highlighted Process Standards for Mathematics

- #2 – Reason abstractly and quantitatively.
- #3 – Construct viable arguments and critique the reasoning of others.
- #4 – Model with mathematics.
- #5 – Use appropriate tools strategically.
- #6 – Attend to precision.
- #7 – Look for and make use of structure.

### Summary of Video

In this lesson, the kindergarten teacher engages her students in decomposing numbers. The students use gummy bears and a visual representation of a book shelf to model different ways to decompose the number 5 into two or more parts. Students are asked to find and represent all possibilities for decomposing the given number into two parts, to share their thinking, and to write an equation to correspond to the representations.

### Prepare for Facilitation

Make sure that you do the following before your presentation:

1. Read Facilitator's Guide Overview and this document that is specific to the Decomposing 5 video.
2. Download the video onto desktop of computer.
3. Make copies of handouts.
4. Review the Standards for Mathematical Practice.
5. Review PowerPoint slides provided.
6. Ensure that the presentation room includes appropriate audio and video equipment for showing video.

**Comment [RH1]:** So, I tried to do this with Shane's video and couldn't.

Heather, can someone download videos from the site the DoE will provide?

<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #f0f0f0; margin: -5px -5px 5px -5px;">Agenda</p> <ol style="list-style-type: none"> <li>1. Become familiar with the Process Standards for Mathematics</li> <li>2. Work the task.</li> <li>3. View the video.</li> <li>4. Debrief the video.</li> </ol> </div>	<h3><u>Agenda</u></h3> <p>Briefly share the agenda for the session. Remind participants that the purpose of this session is to introduce teachers to the Process Standards for Mathematics (PSs) and observe how they are enacted in the elementary classroom.</p>
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### Become familiar with the Process Standards

- Read the brief descriptions of the 8 Process Standards for Mathematics.
- Underline key words for each standard.
- In small groups, share your thoughts or questions about each Process Standard. Be prepared to share your understanding of the Process Standards for Mathematics with the rest of the participants.

### Process Standards for Mathematics

Pass out handout entitled “Brief Version of Standards for Mathematical Practice”. Have participants read the descriptions of the eight standards. As they read, have them underline key words for each of the eight standards. After everyone has finished, have the participants get into small groups to share their thoughts about each standard. After sufficient time has passed, debrief the findings in whole group discussion. One way to do this would be to ask each group to share their thoughts on one PSM, until all groups have shared or all PSMs have been discussed. As each group shares, ask for additional input from other small groups and/or add your own ideas, if necessary, to clarify the intent of each practice.

Note: This step may be optional if the participants are already familiar with the PSMs or have participated in other video reviews from the *Process Standards for Mathematics in Action!* series.

### Work the task

My mom loves gummy bears. So she asked me to go to the store last night. She said, “Will you please get me some gummy bears?” I said, “Sure, Mom.” She said, “I want 5 gummy bears.” When I got home she said, “Thanks for getting me the bears. But now I want you to put them away. I want you to put them on the two shelves in the kitchen.” I want you to find all the different ways you can put the gummy bears on the shelves. Then I want you to write an equation for each of the ways you find.



### Work the Task

Provide participants with a copy of the task and gummy bears or another appropriate manipulative. Read the word problem from the slide, and ask participants to work the task individually. As participants are working the task, ensure that participants have listed all possibilities, and prompt them to convince you how they know they have found all of them.

After everyone has completed the task ...

- have one participant share his/her response with the rest of the participants.
- ask the participant how he/she knew that he/she had all of the decompositions of 5.
- discuss potential misconceptions that might be evident in the children’s work.


### IAS-M Connection

K.CA.2 Solve real-world problems that involve addition and subtraction within 10 (e.g., by using drawing to represent the problem).

### Connect to Indiana Academic Standards for Mathematics

Ask participants to consider the potential of this task to support the development of the skills necessary for children to meet the standard listed below:

K.CA.2 Solve real-world problems that involve addition and subtraction within 10 (e.g., by using drawing to represent the problem).

<p style="text-align: center;"><b>Expectations for Viewing the Video</b></p> <ul style="list-style-type: none"> <li>Assume there are many things you do not know about the classroom and the students.</li> <li>Assume good intent and expertise on part of the teacher.</li> <li>Keep focused on how the <u>students</u> are engaging in the task.</li> </ul> <p><small>Adapted from Classroom Discussions Using Math Talk to Help Students Learn, 2009, 2nd edition, p. 144</small></p>	<p><u><b>Expectations for Viewing Video</b></u></p> <p>Go over the following expectations before viewing the video.</p> <ol style="list-style-type: none"> <li>Assume that there are many things you do not know about the students, the classroom, and the shared history of the teacher and students on the video.</li> <li>Assume good intent and expertise on the part of the teacher. If you cannot understand his or her actions, try to hypothesize what might have motivated him or her.</li> <li>Keep focused on how the students are engaging in the task(s) and whether they are interacting in ways that align with the SMPs.</li> </ol>
<p style="text-align: center;"><b>View the Video</b></p>  <p>During the video, when you see the light bulb appear, it is an indication you should <b>pay special attention</b> to the students' and teacher's actions.</p> <p>Record what you see happening on the Video Analysis Matrix.</p>	<p><u><b>Viewing the Video</b></u></p> <p>Before viewing the video, distribute the Video Analysis Matrix. Explain that when the participants notice the light bulb icon, they should begin watching for teacher and student actions that align with one or more of the mathematical practices.</p> <p>View the video together. You may want to pause the video briefly at the end of each time period when an icon is displayed to allow participants time to note their ideas on the Matrix. (See sample matrix in this facilitator's guide for when each time period ends.)</p>
<p style="text-align: center;"><b>Debrief the Video</b></p> <ul style="list-style-type: none"> <li>For each row on your Video Analysis Recording Sheet, discuss what you noticed while you watched the video in your small group.</li> <li>Then determine which Process Standard(s) for Mathematics you believe was best exhibited in the classroom during this time period.</li> </ul>	<p><u><b>Video Debriefing:</b></u></p> <p>After watching the video, ask participants to share in small groups what they noticed for each time period listed in the Video Analysis Matrix. Ask participants to add a third column to the matrix in which they identify the possible SMPs that are exhibited.</p> <p>After sufficient time has passed, ask if anyone is willing to share <del>their</del><u>his/her</u> SMP, supporting it with evidence from the video. Repeat this process for each time period. If necessary, have teachers re-watch segments of the video. Explain to the participants there may be differing opinions about which SMP is most prominent; however, each SMP mentioned must be backed up by evidence from the video. If necessary, have the participants refer back to the wording of the SMP to clarify its meaning. (For large groups of participants, consider the use of small-group discussion prior to whole-group discussion.) Remember that student and teacher actions may be interpreted in different ways, so there are no "right" answers, although the table does provide sample responses. The goal of documenting evidence of the SMPs is to provoke teacher reflection and discussion about the SMPs.</p>

### Additional Questions

1. In PS.5, the emphasis is on the student using appropriate tools strategically. In this video, the teacher chose the tools for the students to use. Do you think this was appropriate for kindergarten?
2. How does the task chosen by the teacher foster the MPSs?
3. How does the teacher facilitate (prompt) the Process Standard(s) in this video?
4. What type of classroom environment supports the Process Standards?

If time allows, follow up the discussion of the SMPs with one or more of these questions:

1. In PS.5, the emphasis is on the student choosing appropriate tools. In this video, the teacher chose the tools for the students to use. Do you think this was appropriate for kindergarten?

*Answers will vary. But at this age a particular tool(s) may need to be chosen by the teacher; they need familiarity with a variety of tools before making that decision on their own.*

2. How does the task chosen by the teacher foster the PSs?

*Possible answers:*

*The task is open-ended and has more than one correct answer.*

*This type of task lends itself to a variety of problem-solving approaches by the students and allows students at different levels to gain entry to the task.*

*Students have the opportunity to share their thinking and their approach used to solve the problem.*

*The task focuses on looking for mathematical structure (PS.7) of the number five.*

3. How does the teacher facilitate (or prompt) the PSs in this video?

*Possible answers:*

*The teacher asks students, "How do you know?"*

*The teacher brings students to the front of the room to share their thinking, and praises students when they display mathematical thinking.*

4. What type of classroom environment supports the PSs?








*Possible answers:*

*Students work together to solve problems.*

*Students feel comfortable sharing their work and discussing their findings.*

*The teacher praises students for thinking "outside the box."*

**SAMPLE COMPLETED VIDEO ANALYSIS MATRIX**

Video Clue	Evidence of Student and Teacher Actions	Mathematical Practice In Action
3:06-3:28  1	Student explains how he knows there are still 6 on the board after being asked by the teacher.	#3 Construct viable arguments
5:24-6:35  2	Students count out 5 gummy bears to represent the problem situation posed by the teacher and write the number 5.	#5 Use appropriate tools strategically
7:53-8:48  3	Student writes equation to represent the arrangement of gummy bears on her shelves. Teacher helps student use symbols appropriately.	#4 Model with mathematics #6 Attend to precision
9:06-9:55  4	When a student shares her work with class, the teacher helps the students understand how the equation aligns with the representation of the gummy bears on the shelves. The teacher is helping to students to “contextualize” or put the numbers back into the context of the problem.	#2 Reason abstractly and quantitatively
10:41-11:16  5	Student points to the 2 bears on the top shelf and the 3 bears on the bottom shelf as an explanation for why she wrote $2 + 3$	#3 Construct viable arguments
14:35-15:09  6	Student understands the flexible use of the equal sign and writes the equation $5 = 3 + 2$ instead of the usual $3 + 2 = 5$ .	#2 Reason abstractly and quantitatively #6 Attend to precision
16:56-17:05  7	Student has written on his paper a series of equations that has a pattern to it: $1 + 4 = 5$ , $2 + 5 = 4$ (this one is incorrect); $3 + 2 = 5$ ; $4 + 1 = 5$ and $5 + 0 = 5$ .	#7 Look for and make use of structure